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EXAMINER	
MALEVIC, DJURA	
ART UNIT	PAPER NUMBER
2884	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/687,550	SEPPI ET AL.	
	Examiner	Art Unit	
	DJURA MALEVIC	2884	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 June 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,4-9,11-47,49,51-53 and 56-59* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4-9,11-47,49,51-53 and 56-59* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 Oct. 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *06/21/2010*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

With regards to claim 55, the claim depends from a cancelled claim.

Response to Arguments

Applicant's arguments with regards claims 1 and 18, filed 03/29/2010 have been fully considered but they are not persuasive.

Applicant's arguments with respect to amended claims 29,35,41,52 and 55 have been considered but are moot in view of the new ground(s) of rejection.

With regards to claim 1, Applicant argues that Frank fails to show two different materials (i.e., for detecting different energies) but shows two different chemical compositions (i.e., for detecting different energies), while Mazess only teaches changing the thicknesses of the materials (i.e., for detecting different energies) and therefore the rejection is improper since two materials are not shown. Applicant further argues that the examiner is silent to applicant's diagram which further makes applicants point. The examiner respectfully disagrees. The examiner appreciates that "two different chemical compositions" are two different materials. Additionally, "[W]hen a patent claims a structure already known in the prior art that is altered by the mere substitution of one element for another known in the field, the combination must do more than yield a predictable result." KSR at 1395 (citing United States v. Adams,383 US 39, 50-51 (1966)).

In this instance, Mazess implies different materials as is known and appreciated in the art along with expressly teaching two detecting materials with different

thicknesses in order to detect different energies (i.e., high and low) (See Col. 27, lines 23 to 45).

Franks teaches an x-ray detecting apparatus 4, either in a stacked (Figure 2) or a side-by-side (Figure 1) arrangement (Col. 4, Lines 33 to 38), comprising high and low energy detectors (i.e., front and back). Franks expressly states that 1) "The front detector may have a lower thickness than the rear detector. In addition, the two detectors may also have different chemical compositions and densities" and 2) "…as detector materials, consisting of elements with atomic numbers in the range of 39 to 57 in the case of low energy detectors, and elements with atomic numbers in the range of 56 to 83 for high-energy detectors", which relates to the differe nt materials to different (i.e., high and low) detected energies. Therefore, Franks clearly shows different materials for detecting the high and low energies (i.e., 1 and 2) is known, useful and substantially equivalent to changing the thicknesses of the materials as expressly taught by Mazess. As such, one skilled in the art can appreciate that the selection of known equivalents would be considered an obvious matter of design choice depending on the needs of the application and the predictability of the combination is within ordinary skill in the art, thus the combination is considered proper.

With regards to the diagrams , applicant mischaracterizes the examiners rejection, the rejection is not to bodily incorporate all of the structures of the secondary reference but only the mere fact and teachings that using different materials for detecting high and low energies is known (i.e., 1 and 2). Therefore, the combination is considering what the combined teachings of the references would have suggested to

those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

With regards to claims 18, Applicant argues that the teachings of Barnes, who shows different semiconductors for different energies, would not have guided one skilled in the art to modify Bogatu, since Barnes teaches a different configuration (i.e., stacked configuration) to Bogatus' (i.e., side-by-side configuration). The examiner respectfully disagrees.

For clarity, first and second photo conducting elements either forming a surface or arranged *side-by-side* is substantially equivalent to "a surface".

The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

Also, it is not necessary that suggestion or motivation be found within the four corners of the references themselves. "The obviousness analysis cannot be confined by a formalistic conception of the words teaching, suggestion, and motivation, or by overemphasis on the importance of published articles and the explicit content of issued patents." KSR Int'l Co. v. Teleflex Inc., 550 U.S. 398, 419 (2007). The Supreme Court also noted in KSR that an obviousness "analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim" because one "can take

account of the inferences and creative steps that a person of ordinary skill in the art would employ." Id. at 418.

In this instance, Barnes shows a dual energy detector comprising different semiconductors which correlates to enhanced results in the dual energy detector. Although, Barnes teaches a stacked configuration, this does not change the fact that Barns teaches that using multiple and different semiconductors for energy discriminations provides an improvement in dual energy detectors. Bogatu teaches a side-by-side detector and states that his invention is used to enhance the contrast and spatial resolution of an image. One skilled in the art can appreciate that the fact that it is well known that a dual energy side-by-side detector reduces the possibility of motion artifacts and edge artifacts, which will also enhance the contrast and spatial resolution of the image. Bogatu clearly shows subject matter that is ready for improvement which may involve "only" the mere application of a known technique. *KSR at1396.*

Furthermore, one skilled in the art would have realized and/or understood that applying the side-by-side configuration which is typical in the art, for discriminating high and low energies, such as shown by Mazess is an obvious and/or common sense modification. In that regard, all of the claimed elements were known in the prior art 1) Bogatus teaches the side-by-side radiation detector comprising a plurality of photoconductors, 2) Barnes teaches the dual energy detector comprising different semiconductors for high and low sensors in order to improve the detection and 3) Mazess teaches that it is well known to use stacked or side-by-side and shows that those configurations are substantially equivalents.

In view of the above and motivation, one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions, and the combination would have yielded predictable results to one of ordinary skill in the art at the time of the invention (see KSR at 1395 (citing United States v. Adams, 383 US 39, 50-51 (1966)), thus the rejection is considered proper.

Notice that Frank may also be applied (See Figures 1 and 2) (Col. 4, Lines 33 – 38) and the rejection of claim 1, up above.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 2, 6- 8, 46 and 57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mazess et al. (US Patent 5,841,833) in view of Frank et al. (US 6,445,765 B1).

With regards to claim 1, Mazess discloses a detector assembly (Figure 21 –23), comprising: a plurality of first imaging elements made from a scintillating material 308 that has a first radiation detection characteristic; and a plurality of second imaging elements made from a scintillating material 312 that has a second radiation detection characteristic (i.e. high and low energies) (Col. 27, Lines 23 – 45). Mazess further discloses that the said detector comprises scintillating materials for rows and column as

claimed (Col.2, Lines 3-4; Col.2, Lines 53-54). Mazess further discloses different sizes and also implies different materials as is known and appreciated in the art (Col. 27, Lines 23 – 45), although not directly expressed. Notice, the selection of a known material based on its suitability for its intended use supports a prima facie obviousness determination.

Also, If a technique has been used to "improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill. *KSR at 1396.* Frank teaches an x-ray detecting apparatus 4, either in a stacked (Figure 2) or a side-by-side (Figure 1) arrangement (Col. 4, Lines 33 to 38) comprising different materials and sizes that exhibit different sensitivities to different energies (i.e., high and low) (Col. 1, Line 24 and Line 45). Thus, one skill in the art can appreciate that the selection of known equivalents would be considered an obvious matter of design choice within the level of ordinary skill in the art, depending on the needs of the application and/or creator.

With regards to claim 2, Mazess discloses either or both of the first imaging elements and the second imaging elements comprise a scintillating material for converting x-ray radiation into photons (Col. 27, Line 11) (Figure 21).

With regards to claim 6, Mazess discloses the first imaging elements and the second imaging elements are arranged relative to each other in a checkerboard pattern (Figure 21).

With regards to claim 7, Mazess discloses the first imaging elements are arranged in a plurality of first lines, and the second imaging elements are arranged in a plurality of second lines (Col. 2, Lines 53-54).

With regards to claim 8, Mazess discloses each of the first lines is positioned adjacent to one of the second lines (Col. 2, Lines 53-54) (Figure 27).

With regards to claims 46, Mazess discloses a radiation projection detector for generating signals in response to a radiation beam (Figure 21), comprising: a conversion panel (Figure 21) configured to generate light photons (i.e. scintillation) in response to a radiation, the conversion panel having a plurality of first conversion elements 308 and a plurality of second conversion elements 312; and a photo detector array aligned with the conversion panel (Figure 22), the photo detector array comprises a plurality of detector elements, each of the detector elements configured to generate a signal in response to light photons received (i.e. photo diodes) from the conversion panel; wherein each of the first conversion elements has a first radiation to photon conversion characteristic, and each of the second conversion elements has a second radiation to photon conversion characteristic (Col. 27, Lines 23 – 45). Mazess further discloses that the said detector comprises scintillating materials for rows and column as claimed. Mazess further discloses different sizes and also implies different materials as is known and appreciated in the art (Col.2, Lines 3-4; Col.2, Lines 53-54), although not directly expressed. Nonetheless, Franks expressly teaches different materials and sizes that exhibit different sensitivities to different energies (Col. 1, Line 24 and Line 45). Thus, one skill in the art can appreciate the selection of known equivalents would be

considered an obvious matter of design choice within the level of ordinary skill in the art, depending on the needs of the application and/or creator.

With regards to claim 57, Mazess show that said imaging elements are configured to receive radiation simultaneously, notice that the structure allows for simultaneously radiation detection by each imaging elements (see figure 22).

Claims 9, 11, 13-16 and 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mazess et al. (US Patent 5,841,833) in view of Frank et al. (US 6,445,765 B1) and Luhta et al. (US Pub 20040057556 A1).

With regards to claims 9 and 56, Mazess discloses a radiation projection detector for generating signals in response to a radiation beam (Figure 21), comprising: a conversion panel (Figure 21) configured to generate light photons (i.e. scintillation) in response to a radiation, the conversion panel having a plurality of first conversion elements 308 and a plurality of second conversion elements 312; and a photo detector array aligned with the conversion panel (Figure 22), the photo detector array comprises a plurality of detector elements, each of the detector elements configured to generate a signal in response to light photons received (i.e. photo diodes) from the conversion panel; wherein each of the first conversion elements has a first radiation to photon conversion characteristic, and each of the second conversion elements has a second radiation to photon conversion characteristic (Col. 27, Lines 23 – 45). Mazess further discloses that the said detector comprises scintillating materials for rows and column as claimed. Mazess further discloses different sizes and also implies different materials as is known and appreciated in the art (Col.2, Lines 3-4; Col.2, Lines 53-54), although not

directly expressed. Nonetheless, Franks expressly teaches different materials and sizes that exhibit different sensitivities to different energies (Col. 1, Line 24 and Line 45). Thus, one skill in the art can appreciate the selection of known equivalents would be considered an obvious matter of design choice within the level of ordinary skill in the art, depending on the needs of the application and/or creator. Mazess fails to expressly disclose a curved array. Luhta discloses that typically, the detector array is a focus-centered array including a curved detection surface defining a focus that coincides with a focus of the x-ray beam which is typically at or near the x-ray source. Therefore, it would have been obvious to one skilled in the art to modify Mazess to include the teachings of Lutha In order that the detector coincides with the x-ray beam.

With regards to claim 11, Mazess discloses the first conversion elements are configured for generating light photons in response to radiation at a first energy level, and the second conversion elements are configured for generating light photons in response to radiation at a second energy level (Col 27, Lines 23 – 45).

With regards to claim 13, Mazess discloses a checkerboard pattern (Figure 21).

With regards to claim 14, Mazess discloses the plurality of the first and the second conversion elements are arranged in a plurality of lines, and each of the plurality of lines of the first conversion elements is located adjacent one of the plurality of lines of the second conversion elements (Figure 7, Col. 2, Lines 47-57).

With regards to claim 15, Mazess discloses the plurality of detector elements comprises a plurality of first detector elements and a plurality of second detector elements (Figures 27, 21 –23).

With regards to claim 16, Mazess discloses the plurality of the first detector elements are configured to generate signals in response to photons having a first energy level, and the plurality of the second detector elements are configured to generate signals in response to photons having a second energy level (Col. 27, Lines 23 – 45).

Claims 4, 5, 9 18 – 22, 26 – 28, 41, 45, 47 - 55 and 59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bogatu and Lutha in view of Barnes (US Patent 5,138167) And Mazess et al. (US Pub. 2002/0191738).

With regards to claims 9, 18, 19, 41, 47 - 55 and 58, Bogatu discloses a radiation projection detector for generating signals in response to a radiation beam (Figure 8a – 8c), comprising: a photoconductor layer configured to generate charges in response to radiation; and a detector array aligned with the photoconductor layer [0046], the detector array comprises a plurality of detector elements, each of which configured to generate a signal in response to a charge received from the photoconductor layer. Note, Bogatu teaches a side-by-side detector, thus disclosing first and second detectors formed in a planer surface. Bogatu does not expressly disclose the photoconductor layer further comprising first photoconductor elements having a first charge-generating characteristic, second photoconductor elements having second charge-generating characteristic. Bogatu fails to expressly disclose a curved array. Luhta discloses that typically, the detector array is a focus-centered array including a curved detection surface defining a focus that coincides with a focus of the x-ray beam which is typically at or near the x-ray source. Therefore, it would have been obvious to one skilled in the

art to modify Bogatu to include the teachings of Lutha In order that the detector coincides with the x-ray beam.

Barnes teaches dual energy solid-state detectors comprising different semiconductor materials (i.e. the combination of Lead oxide and mercuric oxide) (Col. 11, Line 50 – 55). Mazess shows it is known to use stacked or side-by-side. Specifically, Mazess teaches a dual energy x-rays are detected by the detector 12 after passing through the meat 22 and the conveyor 24. The detector 12 may be energy discriminating, for example, using a stacked or side-by-side detector design known in the art in which different detector elements are filtered to be preferentially sensitive to different x-ray energies or may be a pulse height discriminating detector such as scintillation detectors or may be an energy indifferent detector synchronously switched with changes in x-ray tube voltage. Thus, it would have been obvious to one skill in the art at the time the invention was made to modify Bogatu to include different semiconductors such as that taught by Barnes and the side-by-side detector which is well known and typical in the art and taught by Mazess order to improve the detections accuracy and sensitivity.

With regard to claims 4 and 5, Barnes discloses HgI_2 and PbI_2 (Col. 11, Line 48 – 56).

With regards to claim 20, Barnes discloses different thicknesses for the first and second photoconductors (Col. 11, Line 27 – 43).

With regards to claims 21 and 22, Bogatu discloses a filter pair having two different filters used to successively filter each beam according to the $K_{EDGE.}$

Specifically, a first filter that is greater and a second filter that is slightly less then the $K_{EDGE,CONTRAST\ AGENT}$, thus providing first radiation characteristic above $K_{EDGE,CONTRAST\ AGENT}$ and second radiation characteristic below $K_{EDGE,CONTRAST\ AGENT}$ [0044].

With regards to claim 26, Bogatu discloses that each detector is electrically wired to a computer to allow the signals generated by the detectors to be processed [0046].

With regards to claim 28, Barnes discloses the photoconductors elements are made from HgI_2 and PbI_2 (See rejection above).

With regards to claim 45, Bogatu modified does not expressly disclose generating electron-hole-pairs; however electron hole pairs are inherent to said semiconductors.

With regards to claim 59, Bogatu show that said imaging elements are configured to receive radiation simultaneously, notice that the structure allows for simultaneously radiation detection by each imaging elements (Figure 8a –8c).

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mazess Frank, Lutha and in view of Bogatu et al. (US Publication 2002/0191751 A1).

With regards to claim 12, Mazess discloses the claim invention according to claim 11 and a k-edge filter for dual energy purposes, but fails to disclose a filter having a first energy below the k-edge agent and a second filter having a second energy level above the k-edge of a contrast agent (Col 1, Line 4 –55). Bogatu discloses filters with lower and higher energies correlating to lower and above the K-edge agent [0013]. Thus, it would have been obvious to one skill in the art at the time the invention was

made to modify Mazess to include a filter having a first energy below the k-edge agent and a second filter having a second energy level above the k-edge of a contrast agent such as that taught by Bogatu to increase image contrast.

Claims 17 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bogatu, Barnes, Mazess and Lutha in view of Tanigawa (US Patent 6,707,876 B2).

With regards to claims 17 and 27, Bogatu modified discloses the plurality of detector elements are arranged in a plurality of lines, and the detector further comprising circuits coupled to the photo detector array and configured to collect signals. Bogatu fails to expressly disclose an access circuit and said circuit configured to collect signals from two or more of the lines of the detector elements simultaneously. Notice that access circuits are well known and conventionally used in the art. For example, Tanigawa shows the claimed access circuit in order to decrease the excessive radiation exposures to the subject is known. In view of the utility, less harmful exposures, it would have been obvious to one skill in the art at the time the invention was made to modify Mazess to include the teachings such as that taught by Tanigawa.

Claims 23, 25 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bogatu, Barnes and Mazess in view of Karellas (US Patent 5,864,146).

With regards to claims 23, 25 and 42, Bogatu discloses that the detector comprises first and second imaging elements arranged relative to each other in a checkerboard pattern [0046], thus disclosing a plurality of detectors elements comprising first and second detector elements. Notice the combination of Bogatu in

view of Barnes and Mazess would imply a checkerboard pattern as claimed, since Bogatu already has a filtered checkerboard pattern. Additionally, checkerboard patterns used to discriminate between energies are well known and conventionally used in the art. Regardless, Karellas shows it is known to discriminate between high and low energies in a checkerboard technique (Figure 35B). Karellas teaches that the scintillator, or the photoconductive material (i.e., in this case of selenium or zinc cadmium telluride), itself can be formed in a checkerboard pattern. This provides a scintillator with alternating thickness across its entire surface. Therefore the scintillator can be used for discrimination between high and low x-ray energies. In the case of the non-scintillator based detectors, such as amorphous selenium or zinc cadmium sulfide, the detector can be manufactured in a similar fashion to yield the desired results. In view of the utility, discriminating between high and low energies, it would have been obvious at the time the invention was made to one skilled in the art to further modify Bogatu with alternating detector rows as taught by Yamazaki in order to acquire two sets worth of data.

Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bogatu and Barnes in view of Yamazaki et al. (US Patent 5,570,403).

With regards to claim 24, Bogatu discloses the claimed invention according to claim 18. Bogatu modified does not disclose the first and second imaging elements arranged in a plurality of lines positioned adjacent to one another. Yamazaki teaches an X-ray detection apparatus with varied energy level capability comprising alternating detector rows (Figure 8). It would have been obvious at the time the invention was

made to one skilled in the art to further modify Bogatu with alternating detector rows as taught by Yamazaki in order to acquire two sets worth of data.

Claims 29, 31, 32, 34, 35, 37, 38 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bogatu et al. (US Publication 2002/0191751 A1) and Lutha in view of Maekawa (EP 1016881 A2)

With regards to claims 29 and 40, Bogatu discloses a radiation projection detector for generating signals in response to a radiation beam (Figures 8a –8c), comprising: a first filter having a first radiation filtering characteristic; a second filter having a second radiation filtering characteristic; a photoconductor layer aligned with the first and the second filters; a detector array aligned with the photoconductor layer. Bogatu fails to expressly disclose first and second filters are physically coupled to the photodetector layer. Notice that it has been held that forming in one piece an article which has formerly been formed in two pieces and put together involves only routine skill in the art. Nonetheless, Maekawa teaches a filter physically coupled to a photodetector (see figure 3). Thus, one skill in the art can appreciate the selection of known equivalents would be considered an obvious matter of design choice within the level of ordinary skill in the art, depending on the needs of the application and/or creator. Bogatu fails to expressly disclose a curved array. Luhta discloses that typically, the detector array is a focus-centered array including a curved detection surface defining a focus that coincides with a focus of the x-ray beam which is typically at or near the x-ray source. Therefore, it would have been obvious to one skilled in the art to

modify Mazess to include the teachings of Lutha In order that the detector coincides with the x-ray beam.

With regards to claims 31, 32 and 37, Bogatu discloses a filter array arranged in an alternating checkerboard pattern [0045], thus disclosing a plurality of first and second regions.

With regards to claim 34, Bogatu discloses the filters and detectors aligned according to first and second photoconductors and filters (Fig. 8a – 8c).

With regarding to claim 35, Bogatu discloses a conversion layer (Fig. 8a – 8c) comprising amorphous silicon array and first and second filters 32q and 34q comprising first and second characteristics, wherein the first and second filters are coupled to the conversion layer, thus also components of the detector. Additionally, Bogatu discloses a detector array aligned with the conversion layer. Bogatu also shows that the detector may include scintillators with photo-multipliers [0032]. Notice that it has been held that forming in one piece an article which has formerly been formed in two pieces and put together involves only routine skill in the art. Nonetheless, Maekawa teaches a filter physically coupled to a scintillator (see figure 3). Thus, one skill in the art can appreciate the selection of known equivalents would be considered an obvious matter of design choice within the level of ordinary skill in the art, depending on the needs of the application and/or creator. Bogatu fails to expressly disclose a curved array. Luhta discloses that typically, the detector array is a focus-centered array including a curved detection surface defining a focus that coincides with a focus of the x-ray beam which is typically at or near the x-ray source. Therefore, it would have been obvious to one

skilled in the art to modify Mazess to include the teachings of Lutha In order that the detector coincides with the x-ray beam.

With regards to claims 37 and 38, Bogatu discloses a filter array arranged in an alternating checkerboard pattern [0045], thus disclosing a plurality of first and second regions.

Claims 30 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bogatu, Luhta and Maekawa in view of Albagli (US Patent 6,418,193 B1).

With regards to claims 30 and 36, Bogatu modified discloses the invention according to claims 29 and 35. Bogatu does not expressly disclose the first and second filters prepared from a material selected from a group consisting of aluminum, copper, and molybdenum. It would have been obvious to one having ordinary skill in the art at the time the invention was made to include a filter comprising aluminum, copper, and molybdenum, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin, 125 USPQ 416.* One would also have been motivated to include in Bogatu, a filter comprising aluminum, copper, and molybdenum such as that taught by Albagli (Col. 1, Line 12) in order to use the preferred materials for spectral filters (Col. 1, Line 12).

Claims 33 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bogatu, Lutha and Maekawa in view of Yamazaki.

With regards to claims 33 and 39, Bogatu modified discloses the claimed invention according to claims 31 and 37. Bogatu does not disclose the first and second

imaging elements arranged in a plurality of lines positioned adjacent to one another. Yamazaki teaches an X-ray detection apparatus with varied energy level capability comprising alternating detector rows (Figure 8). It would have been obvious at the time the invention was made to one skilled in the art to modify Bogatu with alternating detector rows as taught by Yamazaki in order to acquire two sets worth of data.

Claim 43 and 44 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bogatu and Barnes in view of Mazess.

With regards to claim 43 and 44, Bogatu modified discloses the claim invention according to claim 41, but fails to expressly disclose the imaging elements adjacent to each other in a plurality of lines. Mazess teaches an imaging detector comprising imaging elements adjacent to each other in a plurality of lines (See rejection above). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Barnes to include imaging elements adjacent to each other in a plurality of lines such as that taught by Mazess in order to improve the sensitivity of the image.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DJURA MALEVIC whose telephone number is 571.272.5975. The examiner can normally be reached on Monday - Friday between 8:30am and 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on 571.272.2444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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